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10/564,552	01/13/2006	Takumi Ito	016778-0503	1857
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EXAMINER				
AMINZAY, SHAIMA Q				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/564,552

**Applicant(s)**

ITO ET AL.

**Examiner**

SHAIMA Q. AMINZAY

**Art Unit**

2618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 7-16 and 18-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-16 and 18-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/S508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### ***DETAILED ACTION***

This is the first office action in response to application No. 10.564,552 filed 1/13/2006.

As originally filed, Claims 7-16, and 18-27 are presented for examination, and claims 1-6, 18, and 28 are cancelled.

***Note:*** *In this office action the punctuation “:” is used as separator between selected paragraph and lines (e.g. 2:1-5 (paragraph 2, lines 1-5)).*

### ***Claim Objections***

1. Claim 8-9, 13-14, 19-20, and 24-25 are objected to because the acronym “-- SNR --” is not descriptive, and it should change to “signal to noise ration (SNR)” in the claims. Applicant’s corrections required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention

2. Claims 18-27 are rejected under 35 U.S.C. 112 first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which is not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In independent claim 18, lines 10-11, claim 23, lines 9-10, the phrase “said transmitter apparatus comprises: estimation means for estimating said channel matrix” is not supported in the specification. The specification does not mention transmitter comprising “estimation means for estimating said channel matrix”, for example”, specification Figures 1-2 and 4-8, page 3, lines 3-6, discuss the receiver side estimator (106) “*The channel estimating apparatus 106 calculates the channel matrix  $H$  based upon the pilot signal transmitted by the transmitter apparatus 21 and this pilot signal received by the receiver apparatus 22 while the pilot signal is known by also the receiver apparatus 22*”, however, the specification does not specifies or even mentions any transmitter estimation means for estimating the channel matrix.

Claims 19-22 and 24-27 are dependent of claims 18 and 23 are rejected under Claim Rejections-35 USC 112 First Paragraph for the same reasons set for independent claims 18 and 23.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(c) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 7-16, and 18-27 are rejected under 35 U.S.C. 102(c) as being anticipated by Thielecke (Thielecke et al., U. S. Publication No. 2004/0052,315).

Regarding claim 7, Thielecke discloses a receiver apparatus (*Fig. 1(4), Fig. 3*) for receiving, by a plurality of receiver antennas (*Fig. 1(3a, 3b), Fig. 3(4a, 4b)*), transmission signals transmitted from a transmitter apparatus (*Fig. 1(1), Fig. 2*) by a plurality of transmitter antennas in a parallel manner (*Fig. 1(2a, 2b), Fig. 2(2a, 2b)*) and for estimating (*e.g. Fig. 3, Channel Estimator (53)*) a channel matrix for causing the transmission signals to be related to received signals to demodulate the received signals based upon said channel matrix (*e.g. Fig. 1-3, 36:1-7, 84:1-15, 59:2-6, the received signals via channels (51-54) are based on transmitter (1) channel matrix process and demodulate in receiver*); the receiver apparatus (*Fig. 1(4), Fig. 3*) comprises:

calculation means for calculating a physical amount so as to estimate a radio line quality with respect to each of signal series based upon only said channel matrix (*e.g.*

*Fig. 1-3, 36:1-7, 60:1-13, 84:1-15, the receiver module (50) and estimator (53) with demodulator (51) calculates the received signal based on the transmitter channel matrix); determination means for evaluating the radio line quality based upon the physical amount calculated by said calculation means so as to determine a transmission parameter in a next transmission operation by said transmitter apparatus with respect to each of the signal series (e.g. Fig. 1, 3, 59:2-6, 61:11-19, the receiver demodulators (51, 52) calculates and configures the signals (parameter) to be transmitted); transmission means for transmitting the transmission parameter determined by said determination means to said transmitter apparatus (e.g. Fig. 1, 3, 33:1-5, 59:2-6, 61:11-19, the receiver configured signals (parameter) is being transmitted via receiver (Fig. 1(4), Fig. 3) transmitter); and detection means for detecting a change in the transmission parameter from the received signals with respect to each of the signal series (e.g. Fig. 1, 3, 9:1-14, 60:11-13, 82:15-18, the demodulators detects the adjusted transmission signals (parameters)).*

Regarding claim 12, Thielecke discloses a radio communication system (e.g., Fig. 1) comprising a transmitter apparatus (Fig. 1(1), Fig. 2) for transmitting transmission signals by a plurality of transmitter antennas in a parallel manner (Fig. 1(2a, 2b), Fig. 2(2a, 2b)); and a receiver apparatus (Fig. 1(4), Fig. 3) for receiving said transmission signals (s.sub.1, s.sub.2) (Fig. 1(2a, 2b)) by a plurality of receiver antennas (Fig. 1(3a, 3b), Fig. 3(4a, 4b)), a for estimating (e.g. Fig. 3, Channel Estimator (53)) a channel matrix for causing the transmission signals to be related to received signals to demodulate

the received signals based upon said channel matrix (e.g. Fig. 1-3, 36:1-7, 84:1-15, 59:2-6, the received signals via channels (51-54) are based on transmitter (1) channel matrix process and demodulate in receiver); wherein said receiver apparatus (Fig. 1(4), Fig. 3) comprises: calculation means for calculating a physical amount so as to estimate a radio line quality with respect to each of signal series based upon only said channel matrix (e.g. Fig. 1-3, 36:1-7, 60:1-13, 84:1-15, the receiver module (50) and estimator (53) with demodulator (51) calculates the received signal based on the transmitter channel matrix); determination means for evaluating the radio line quality based upon the physical amount calculated by said calculation means so as to determine a transmission parameter in a next transmission operation by said transmitter apparatus with respect to each of the signal series (e.g. Fig. 1, 3, 59:2-6, 61:11-19, the receiver demodulators (51, 52) calculates and configures the signals (parameter) to be transmitted); transmission means for transmitting the transmission parameter determined by said determination means to said transmitter apparatus (e.g. Fig. 1, 3, 33:1-5, 59:2-6, 61:11-19, the receiver configured signals (parameter) is being transmitted via receiver (Fig. 1(4), Fig. 3) transmitter); and detection means for detecting a change in the transmission parameter from the received signals with respect to each of the signal series (e.g. Fig. 1, 3, 9:1-14, 60:11-13, 82:15-18, the demodulators detects the adjusted transmission signals (parameters)); and wherein, said transmitter apparatus (Fig. 1(1), Fig. 2) comprises: reception means for receiving said transmission parameter transmitted by said determining means (Fig. 1(1), 33:1-9, the transmitter (1) transceiver receives and transmits via radio channels (51-54) to/from receiver (4)); and means for controlling the

transmission operation with respect to each of the signal series based upon said transmission parameter received by said reception means (*Fig. 1-2, 59:2-6, 38:4-7, 43:1-4, the transmission controller (e.g., 15a, 15b)*).

Regarding claim 18, Thielecke discloses a transmitter apparatus (*Fig. 1(1), Fig. 2*) for transmitting data by a plurality of transmitter antennas (*Fig. 1(2a, 2b), Fig. 2(2a, 2b)*) in a parallel manner to a receiver apparatus (*Fig. 1(4), Fig. 3*) for receiving by a plurality of receiver antennas (*Fig. 1(3a, 3b), Fig. 3(4a, 4b)*), said transmitter apparatus being used in a radio communication system in which a channel matrix (*e.g. Fig. 1-3, 36:1-7, 84:1-15, 59:2-6, the received signals via channels (51-54) are based on transmitter (1) channel matrix process and demodulate in receiver*) for causing the signal transmitted by said transmitter apparatus to be related to said signal detected by said receiver apparatus becomes identical to a channel matrix for causing the signal transmitted by said receiver apparatus to be related to said signal detected by said transmitter apparatus (*e.g. Fig. 1-3, 36:1-7, 84:1-15, 59:2-6*); wherein, said transmitter apparatus (*Fig. 1(1), Fig. 2*) comprises: estimation means for estimating said channel matrix (*e.g. Fig. 3, Channel Estimator (53)*); calculation means for calculating a physical amount so as to estimate a radio line quality with respect to each of signal series based upon only said channel matrix (*e.g. Fig. 1-3, 36:1-7, 60:1-13, 84:1-15, the receiver module (50) and estimator (53) with demodulator (51) calculates the received signal based on the transmitter channel matrix*); determination means for evaluating the radio line quality based upon the physical amount calculated by said calculation means (*e.g. Fig. 1-2, 36:1-7, 37:1-6, 38:4-*



7) so as to determine a transmission parameter in a next transmission operation with respect to each of the signal series based upon the transmission parameter determined by said determination means (*e.g. Fig. 1-2, 36:1-7, 37:1-6, 38:4-7*).

Regarding claim 23, Thielecke discloses a radio communication system (*e.g., Fig. 1*) comprising a transmitter apparatus (*Fig. 1(1), Fig. 2*) for transmitting transmission signals by a plurality of transmitter antennas in a parallel manner (*Fig. 1(2a, 2b), Fig. 2(2a, 2b)*); and a receiver apparatus (*Fig. 1(4), Fig. 3*) for receiving said transmission signals (*Fig. 1(2a, 2b)*) by a plurality of receiver antennas (*Fig. 1(3a, 3b), Fig. 3(4a, 4b)*), a channel matrix for causing the signal transmitted by said transmitter apparatus to be related to said signal detected by said receiver apparatus becomes identical to a channel matrix for causing the signal transmitted by said receiver apparatus to be related to said signal detected by said transmitter apparatus (*e.g. Fig. 1-3, 36:1-7, 84:1-15, 59:2-6, the received signals via channels (51-54) are based on transmitter (1) channel matrix process and demodulation*); wherein, said transmitter apparatus (*Fig. 1(1), Fig. 2*) comprises: estimation means for estimating said channel matrix (*e.g. Fig. 3, Channel Estimator (53)*); calculation means for calculating a physical amount so as to estimate a radio line quality with respect to each of signal series based upon only said channel matrix (*e.g. Fig. 1-3, 36:1-7, 60:1-13, 84:1-15, the receiver module (50) and estimator (53) with demodulator (51) calculates the received signal based on the transmitter channel matrix*); determination means for evaluating the radio line quality based upon the physical amount calculated by said calculation means so as to determine a transmission

parameter in a next transmission operation with respect to each of signal series (*e.g. Fig. 1, 3, 59:2-6, 61:11-19, the receiver demodulators (51, 52) calculates and configures the signals (parameter) to be transmitted*); and means for controlling the transmission operation with respect to each of the signal series based upon the transmission parameter determined by said determination means; and wherein (*Fig. 1-2, 59:2-6, 38:4-7, 43:1-4, the transmission controller (e.g., 15a, 15b)*), said receiver apparatus (*Fig. 1(4), Fig. 3*) comprises: means for detecting a change in said transmission parameter from the signals received from said transmitter apparatus with respect to each of signal series (*e.g. Fig. 1, 3, 9:1-14, 60:11-13, 82:15-18, the demodulators detects the adjusted transmission signals (parameters)*).

Regarding claims 8, 13, 19, and 24, Thielecke teaches all the limitations of claims 7, 12, 18, 23, and further, Thielecke teaches wherein, said physical amount is an SNR of said demodulated signals (*e.g., 7:1-12, 61:11-19*).

Regarding claims 9, 14, 20, and 25, Thielecke teaches all the limitations of claims 7, 12, 18, 23, and further, Thielecke teaches wherein, said physical amount corresponds to a sum of SNRs of signals which are detected by said plurality of receiver antennas when it is assumed that said plurality of transmitter antennas separately transmit signals (*e.g., 33:1-9, 7:1-12, 61:11-19, 59:2-6*).

Regarding claims 10, 15, 21, and 26, Thielecke teaches all the limitations of claims 9,

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14, 20, 25, and further, Thielecke teaches wherein, said physical amount corresponds to a sum of one, or a plurality of said SNRs having larger values (*e.g.*, 7:1-12, 61:11-19, 84:11-15).

Regarding claims 10, 15, 21, and 26, Thielecke teaches all the limitations of claims 7, 12, 18, 23, and further, Thielecke teaches wherein said transfer parameter is a modulation level in mapping (*e.g.*, 76:1-22, *modulation in mapping*).

### ***Conclusion***

The prior art made of record considered pertinent to applicant's disclosure, see PTO-892 form.

### ***Inquiry***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shaima Q. Aminzay whose telephone number is 571-272-7874. The examiner can normally be reached on 7:00 AM -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mathew D. Anderson can be reached on 571-272-4177. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/SHAIMA Q. AMINZAY/  
Examiner, Art Unit 2618

11/20/2008

/Matthew D. Anderson/  
Supervisory Patent Examiner, Art Unit 2618